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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/730,685

12/08/2003

Richard M. Lange

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06/15/2006

THE LUBRIZOL CORPORATION
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EXAMINER

SINGH, PREM C

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/730,685

Applicant(s)

LANGE ET AL.

Examiner

Prem C. Singh

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>06/20/2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-10, 15, 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al (US Patent 4,922,047).

Claim 1.

Chen invention discloses, "Traction fluid was prepared by copolymerizing beta-pinene and isobutylene using HZSM-5B zeolite catalyst." (Column 9, lines 42-49). "It is understood, however, that in the preferred embodiment of the invention the lube oil product is hydrogenated." (Column 7, lines 60-63).

It is to be noted that beta-pinene is a cyclic olefin monomer and isobutylene is a non-cyclic (C₄) olefin monomer.

Claims 4, 5, 6.

Chen invention discloses, "The traction fluid is made by the catalytic polymerization of styrene, alpha-methyl styrene, beta-methyl styrene, or by catalytic polymerization of propylene or butylenes." (Column 2, lines 9-12).

Claims 7, 8.

Chen invention discloses, "The bicyclic terpenes that can be used in accordance with the present invention include alpha-pinene, beta-pinene, and camphene. The monocyclic terpenes that can be used in accordance with the present invention include alpha-terpinene, beta-terpinene, and limonene." (Column 3, lines 25-29).

Claims 9, 10.

Chen invention discloses, "The traction fluid is made by the catalytic polymerization of propylene or butylenes." (Column 2, lines 9-12).

Claim 15.

Chen invention discloses, "Catalysts having high surface acidity are particularly useful in the present invention." (Column 6, lines 26-27).

Claim 22.

Chen invention further discloses, "The process is carried out in the liquid phase at a catalyst bed temperature of 50-200°C, the residence time of terpene feed in contact with the catalyst can be 0.2 to 150 hrs." (Column 6, lines 52-65). In the embodiment of the invention in which a bi-cyclic or mono-cyclic terpene is copolymerized with a light olefin such as propylene and/or butylene the same process conditions are used." (Column 7, lines 19-22). "The desired lube oil copolymerized traction fluid boiling at 650°F+ is separated from the reaction product." (Column 7, lines 25-27). "It is

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understood, however, that in the preferred embodiment of the invention the lube oil product is hydrogenated." (Column 7, lines 60-63).

It is to be pointed out that separation of the product implies that the volatile components are removed.

Claim 23.

Chen invention adds, "Various catalyst systems are disclosed. For example, for styrene polymerization conventional aqueous sulfuric acid can be used, and for butylenes polymerization acid catalysts such as AlCl_3 , or BF_3 can be used." (Column 2, lines 14-17).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-3, 11-14, 16-21, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US Patent 4,922,047).

Claim 2.

Chen invention discloses, "The catalytic process of the present invention converts the bicyclic and monocyclic terpenes into high boiling dimmers, trimers and tetramers having C₂₀ to C₄₀ carbon atoms." (Column 7, lines 5-8).

Although Chen invention does not specifically mention about 10 total units of monomers (a) and (b), it would have been obvious to one skilled in the art to use total 10 units of monomers to control the physico-chemical properties of the polymer.

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Claim 3.

Chen invention discloses, "The lube oil traction fluids of both of the above embodiments can have a kinetic viscosity at 100°C of 3 to 10 cS." (Column 7, lines 38-41).

Chen invention does not disclose Brookfield viscosity at -30°C.

Since Chen invention discloses the viscosity of the traction fluid at 100°C, it would have been obvious to one skilled in the art at the time the invention was made to specify Brookfield viscosity at -30°C to check the performance of the fluid at low temperatures.

Claims 11, 12.

Chen invention does not disclose using isoprene or non-cyclic terpene as component (b).

Chen invention uses cyclic terpenes as component (a) and propylene and/or butylenes as component (b). Since isoprene is also an alkene, its properties are similar to propylene and butylenes and therefore, it is expected that the use of isoprene as component (b) will be equally successful. Although Chen does not mention non-cyclic terpene, one skilled in the art will use a non-cyclic terpene because of the success of cyclic terpenes as component (a).

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Claim 13.

Chen invention discloses, "The terpene and light olefin can be mixed at a mole ratio of terpene to propylene and butylene of 1:4 to 4:1" (Column 5, lines 32-33).

Chen invention does not disclose 10-90 wt % of monomers as components (a) and (b).

By Chen invention's disclosure of using mole ratio of monomers in (a) and (b) of 1:4 to 4:1, it would have been obvious to one skilled in the art at the time the invention was made to modify Chen invention and use 10 to 90 wt% of monomers (1:9 to 9:1) in (a) and (b) to cover a wider range of the amount of monomers and thus increase the flexibility of the process.

Claim 14.

Chen invention discloses, "The traction fluid is made by the catalytic polymerization of styrene or by catalytic polymerization of propylene or butylenes." (Column 2, lines 9-12).

It is to be noted that styrene is a vinyl aromatic monomer. Although Chen invention does not disclose copolymerization of styrene (a) and propylene (b), it would have been obvious to one skilled in the art to use 40 to 80% of monomers in (a) and 60 to 20% monomers in (b) for producing a copolymer.

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Claims 18- 20.

Chen invention does not disclose using oil of lubricating viscosity other than the addition product and use of additional traction fluid.

Since Chen invention discloses that the lube oil traction fluids of both of the embodiments (one using only terpenes and the other using terpenes and olefins) can have a kinetic viscosity at 100°C of 3 to 10 cS, it would have been obvious to one skilled in the art to use a composition comprising lube oils obtained in two different embodiments or two different processes with different viscosities. This will allow producing lube oils with variable physico-chemical properties for different uses.

Claims 16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US Patent 4,922,047) in view of Johnson et al (US Patent 6,346,585).

Claims 16, 24.

Chen invention does not disclose using a solvent in the addition reaction.

Chen invention does not disclose using a heteropolyacid as an acid catalyst.

Johnson invention discloses, "A method for producing polymers by polymerization of at least one olefin using a catalyst comprising a partially or fully neutralized ammonium salt of heteropolyacid." (Column 3, lines 45-50). "The heteropoly catalysts are active as their acid form, in the fully salt form, or in the partially exchanged salt form." (Column 4, lines 26-30). "The polymerization can be conducted neat but is

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preferably conducted in the presence of a substantially inert hydrocarbon solvent.”
(Column 5, lines 57-62).

Since Chen and Johnson both inventions are polymerizing olefins, it would have been obvious to one skilled in the art at the time the invention was made to combine the teachings of Chen and Johnson and use a heteropolyacid as catalyst due to its ease for use in any form. It would also have been obvious to use an inert solvent to facilitate the polymerization reaction.

Claims 17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US Patent 4,922,047) in view of Tipton (US Patent 6,372,696).

Claims 17, 21.

Chen invention does not disclose use of additives.

Chen invention does not disclose a method for lubricating a power transmission apparatus.

Tipton invention discloses, “A traction fluid comprising an additive selected from the group consisting of dispersants, detergents and mixtures thereof. The present invention also provides a method of lubricating a power transmission apparatus such as a traction drive, comprising employing therein the above-described traction fluid.”
(Column 2, lines 25-44). “In one embodiment a dispersant viscosity modifier is

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prepared." (Column 13, lines 57-58). "Another optional, but preferred species is one or more friction modifiers." (Column 15, lines 42-44).

It would have been obvious to one skilled in the art at the time the invention was made to combine the teachings of Chen and Tipton and blend different additives disclosed in Tipton invention into the traction fluid disclosed in Chen invention for improved and better performance of the traction fluid.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nambu, US Patent 4,329,529.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on MF 6:30 AM-3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ps/051106



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